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be difficult to raise from the larva state, but the difficulty can be overcome, and we hope that this paper with the beautiful plates containing figures of so many forms, may excite students in entomology to rear our dragon flies in aquaria. It is this kind of work that tells in advancing science, and a work to which the labors of systematists are largely preparatory. Those who live away from libraries and museums can easily devote themselves to observing the habits and early stages of insects, and thus do as much, or even more, to advance entomology than they who give their time to describing new species. Mr. Cabot describes the immature stages (larva and pupa) of seventeen species of which four were raised and identified beyond any doubt. Dr. Hagen holds himself responsible for the determination of the species and gives a synopsis at the end taken from Mr. Cabot's description.

THE LENS.\*—In spite of the fire the first number of this new scientific journal has been reprinted and issued with commendable promptness. Among the original articles is a conspectus of the "Families and Genera of the Diatomaceæ," by Prof. H. L. Smith, which will prove very useful to students; while botanists will be interested in the list of plants about Chicago, by H. H. Babcock. Dr. J. J. Woodward describes a new method of photographing histological preparations by sunlight. Dr. Danforth contributes a useful article on the preparation and preservation of sections of soft tissues, and the editor gives us a list of the Diatoms of Lake Michigan with a description of a new *Rhizosolenia* (*R. eriensis*). The selected articles and miscellany are timely, and the whole appearance of the magazine very pleasing.

## BOTANY.

DISPERSION OF SEEDS BY THE WIND. — A Kerner, director of the Botanic Garden at Innsbruck in the Tyrol, has contributed a very interesting paper on this subject to the "Zeitschrift des Deutschen Alpen-vereins." In order to ascertain the extent to which seeds are carried by currents of air, the writer made a careful investigation of the flora of the glacier-moraines, and of

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\* A Quarterly Journal of Microscopy and the allied Natural Sciences: with the Transactions of the State Microscopical Society of Illinois. Edited by S. A. Briggs, Chicago. No. 1, 8vo. pp. 64. 1871. With a lithographic plate and wood cuts.

the seeds found on the surface of the glaciers themselves, believing that these must indicate accurately the species whose seeds are dispersed by the agency of the wind. Of the former description he was able to identify, on five different moraines, one hundred and twenty-four species of plants, and a careful examination of the substances gathered from the surface of the glacier showed seeds belonging to thirty-six species which could be recognized with certainty. The two lists agreed entirely in general character, and to a considerable extent, also specifically; belonging, with scarcely an exception, to plants found on the declivities and in the mountain valleys in the immediate vicinity of the glacier; scarcely in a single instance even to inhabitants of the more southern Alps. M. Kerner's conclusion is that the distance to which seeds can be carried by the wind, even when provided with special apparatus for floating in the air, has generally been greatly over-estimated; and this is very much in accordance with the view advanced by Mr. Bentham in his Anniversary Address to the Linnæan Society of London, in 1869. Along with the seeds M. Kerner found, on the surface of the glacier, more or less perfect remains of a number of insects belonging to the orders Lepidoptera, Hymenoptera, Diptera and Coleoptera, which, like the seeds, belonged almost exclusively to species abounding in the immediate neighborhood of the glaciers.

The species of plants which are specially inhabitants of the higher mountain regions M. Kerner divides into two classes. In the first the seed or fruit is provided with an appendage of various kinds, to enable it to be carried easily by the wind; the species possess generally a short span of life, are continually shifting their habitat, will grow where there is scarcely any soil, and especially love to establish themselves in the clefts or on the inaccessible sides of rocks; their floating apparatus appears designed rather to enable them to reach these habitats, where no other plants could establish themselves, than to be carried any great distance by the wind. The second kind are much more stationary, have a greater length of life, require a richer soil, are unprovided with any apparatus for flight, and can advance only very gradually; they are consequently much less abundant than the first kind. From the above observations, and the fact of the existence of detached localities for some of the mountain species in the Tyrolese Alps, very remote from their more abundant habitats further south, M. Kerner

draws the conclusion that at a period subsequent to the glacial epoch a warmer climate than the present overspread that part of Europe, when the species referred to extended over a wide area, of which the present isolated localities are the remains.—A. W. B.

MIMICRY IN PLANTS.—In the January number of the London “Popular Science Review” Mr. A. W. Bennett brings forward some remarkable illustrations of this singular class of phenomena, which he divides under two heads:—those relating to the whole habit and mode of growth, and those which relate to the development of some particular organ or part. Of the former kind a very familiar instance occurs in the extraordinary resemblance between the succulent plants which form so prominent a feature in the flora of the sandy deserts of America and Africa, belonging to the widely dissociated genera *Cactus*, *Euphorbia* and *Hapelia*; and instances of this kind the writer thinks may generally be accounted for by similarity of external conditions. Far more difficult is it to explain the cases of “mimicry” which come under the second head, in which species growing either in the same or in different localities, imitate one another to a marvellous degree of closeness in the form and venation of the leaf, the external appearance of the seed-vessel, or in some other particular organ; and of this kind several illustrative drawings are given. It appears impossible to suggest any explanation of this curious phenomenon like that which has been brought forward in the case of similar close resemblances in the animal kingdom, viz., “protective resemblance” springing up by the operation of natural selection, and these singular facts seem to deserve closer attention than they have yet received. Mr. Bennett doubts whether natural selection is adequate to account for the growth of organisms of this description, and believes we must recur to the predarwinian doctrine of “design” in nature. — A. W. B.

NARDOSMIA PALMATA.—About four years ago my attention was called, by Prof. Albert Hopkins, to a locality in this town where the *Nardosmia palmata* Hook. is somewhat plentiful. It grows in nearly open ground; only a few large trees and some bushes being near, and in the immediate vicinity of a perennial spring of pure cold water. What are the New England localities of this rare plant?—SANBORN TENNEY, *Williams College, Mass.*